

MODULE 1: Mapping the Innovation

I. Background and Purpose of the Innovation

Project Name:

Innovative Concept (if applicable):

1. Why was the innovation developed or proposed?
2. What problem or opportunity does the innovation address?
3. To what extent and does the innovation focus on the following:
 - a** Individual facilities
 - b** Economic sectors or groups of sectors
 - c** Other regulated entities
 - d** Communities
 - e** Tribes
 - f** Other
4. To what extent is the innovation intended to:
 - g** Improve technology
 - h** Streamline Federal/State regulations
 - i** Improve organizational management/operations
 - j** Make more efficient use of Federal/State/local resources
 - k** Improve stakeholder involvement
 - l** Foster organizational change, especially with respect to organizational culture
 - m** Improve environmental management practices (e.g., pollution prevention, environmental stewardship, environmental data, etc.)
 - n** Consider cross-media impacts or multi-media strategies
 - o** Other
5. In what way(s) does the innovation involve new ideas and approaches when compared to the current/existing approach?
6. What programs or policies are impacted by the innovation, and how?

II. Identifying Customers, Partners and Stakeholders of the Innovation

7. Who are the key regulated entities?
8. Who are the key partners?
9. Who are the key customers?
10. Who are the key stakeholders?

11. Who has primary responsibility for designing, overseeing, and implementing or using the innovative approach or tool?
12. Does the innovation involve delegation of regulatory responsibilities from EPA to a Tribe or State or from the State to a local government? (Y/N). If yes, how?

III. Tools that Assist Innovation

13. What innovative tools are employed (e.g., economic incentives, EMSs, regulatory reform, smart permitting, pollution prevention, performance-based compliance assistance, information management and access, risk-based cleanup standards)? Please describe.

IV. Drivers for Innovation

14. Describe all drivers for innovation that pertain to your innovation and explain how such drivers promote innovation (e.g., law or policy that promotes the use of the innovation).

V. Barriers to Innovation

15. Describe all challenges to your innovation and explain how such challenges present barriers.

VI. Describing the Logic of the Innovation

Many innovative programs and projects often run into trouble because they lack a well-articulated road map describing the logic of the program or project. A logic model is a tool that is used to graphically depict and explain the logical relationships that exist between inputs, outputs and outcomes. It graphically illustrates what must occur in order for the project to accomplish its goals. Please use the answers from the questions above and Exhibit 1 below to develop a logic model of your innovative program or project. Chapter 1 of the User's Guide provides guidance on the steps needed to develop a logic model of the project.

Exhibit 1

Resources	Activities/ Programs	Outputs	Customers	Short- term Outcomes	Intermediate outcomes	Long-term environmental outcomes
	→	→	→	→	→	

MODULE 2: Assessing the Environmental Results of the Innovation

I. Identifying Environmental Goals of the Innovation

1. What are the specific **environmental goals** that the innovation is intended to achieve? Please describe.
2. Do the **goals of the innovation match the problem(s)** that the project is trying to solve? (Related to Module 1)
3. Do the goals of the innovation match the expected/intended outcomes of the innovation? (Related to Module 1)
4. Do the goals of the innovation include **cross-media transfers**? If yes, how many and what types of cross-media transfers are being considered?

II. Measuring the Environmental Results

Environmental Indicators

5. For each environmental goal, what qualitative and quantitative **environmental indicators** (e.g., beaches closed, waters impaired, brownfields redeveloped) are being used to measure progress/impacts (*see Companion User's Guide for examples*)?
6. What is the **measurement approach** (e.g., modeling data, in-situ experiment, historical data extrapolation, real-time, one-time observations) that will be used to measure progress for each environmental goal?
7. For each environmental indicator, what is the **pre-innovation “baseline”** against which progress is measured (e.g., baseline is that 10 percent of beaches currently impaired—the innovation is to have zero impaired beaches in five years)?
8. How will pre-innovation “baseline” conditions for the **environmental impacts of third parties** (customers, suppliers, environmental quality trading partners, etc.) be established? How will changes be measure and non-innovation related changes controlled for?
9. For each of the environmental indicators listed, what is the **schedule for data collection** (e.g., daily, weekly, quarterly, annually etc.)?
10. According to the indicators listed above, what have been the **environmental impacts** of the innovation (e.g., 100 tons of volatile organic compounds emissions have been eliminated to date)? *Provide both qualitative and quantitative outcomes. The innovation may be of too recent origin for environmental impacts to be observable. Provide qualitative outcomes if possible—e.g., increase in senior management review, etc.*

Environmental Results

11. To what extent are the **environmental impacts** of the innovation consistent with what was expected at the time of design and implementation?
12. Are **sufficient data available** to determine if the innovation has met its environmental goals (e.g., are the data qualitative or quantitative or both)?
13. To what extent **has the innovation been an improvement** over the prior/traditional approach with regard to:
 - i. Human health
 - ii. Organizational management
 - iii. Community based protection
 - iv. Quality of life
 - v. Ecosystem health
 - vi. Tribal management
 - vii. Environmental Justice communities
 - viii. Others
14. How are **environmental results verified**? Who is responsible for verifying results?
15. How often are environmental results verified?

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Innovation Analysis Modules

Exhibit 2: Environmental Results Table

Project Objectives with Goals	Indicators (EMS Objectives and Targets)	Pre-project Base Statistics	Sources of info and Calculations	Output Metrics	Impact / Outcome
	Regulatory Indicators— Federal/State/Local				
	Non-regulatory Indicators				

MODULE 3: Assessing the Costs and Cost Savings of the Innovation

I. Measuring the Costs and Cost Savings of the Innovation

1. What is the measurement approach that will be used to estimate the costs and cost savings of the innovation? What indicators will be used (*e.g., compliance measures, materials use, numbers of spills, etc.*)?
2. What are the pre-innovation baselines against which costs and cost savings are measured?
 - a. Costs of compliance
 - b. Cost savings of streamlined permitting system
 - c. Cost savings of reallocation of personnel
 - d. Other (*e.g., new investments, time to market, competitiveness*)
3. What data sources will be used to measure costs and cost savings?
4. To what extent has the innovation resulted in costs or cost savings?

II. Savings of the Innovation

5. What significant **time savings/savings** has your organization derived as a result of the innovation? (*Please describe the key types of time savings you incurred including staff time and contractor savings involved in activities including project development, implementation, monitoring, reporting and record keeping, rule revisions, time to market, permit administration, and inspections.*)
6. What **significant cost savings in capital, operation and maintenance of new equipment, operation and maintenance of existing equipment, materials, or energy** has your organization derived as a result of the innovation?
7. What **other savings** (*e.g., insurance, worker compensation, creation of jobs etc.*) has your organization derived as a result of the innovation?
8. What **significant savings** (including major equipment and operation and maintenance costs) has the **regulated community** derived as a result of the innovation?
9. What **significant savings** have **local communities or other stakeholder groups** derived as a result of the innovation?
10. What **economic activity**, if any, has been generated by implementation of the innovation (*e.g., jobs may be created if a brownfields site is redeveloped*)?

III. Costs of the Innovation

11. What significant **time costs/investments** has your organization incurred as a result of the innovation? *(Please describe the key types of costs you incurred including staff time and contractor costs involved in activities including project development, implementation, monitoring, reporting and record keeping, rule revisions, permit administration, and inspections.)*

- a. Costs to the regulator
- b. Costs to the regulated
- c. Costs to the local community or other stakeholders

12. What significant **costs/investments in capital, operation and maintenance of new equipment, operation and maintenance of existing equipment, materials, or energy** has your organization incurred as a result of the innovation?

13. What **other significant costs** (e.g., insurance, worker compensation, creation of jobs etc.) has your organization incurred as a result of the innovation?

IV. Relative cost advantage

14. If the innovation were more used more widely in the future, how would the **marginal (i.e., per innovation) savings and costs** of the innovation change for **your organization**?

- a. Regulator
- b. Regulated
- c. Local community and other stakeholders

15. What is the **difference** between the innovation costs and baseline costs (i.e., costs associated with current regulatory framework)?

Exhibit 3; Costs/Cost Savings Model Table			
Category of Costs	Baseline Costs	Costs of Project	Net Change: Costs or Cost Savings
Real-Resource Compliance Costs			
Government Regulatory Costs			
Social Costs			
Transitional Costs			
Indirect Costs			

MODULE 4: Enforcement and Compliance Assurance

I. Monitoring, Record-Keeping, and Reporting to State Agencies, EPA, and Stakeholders

Design Questions

1. What is the **legal implementing mechanism** for the innovation?
2. What **standard permit conditions or regulatory requirements**, if any, will require/have been modified?
3. What are the specific **requirements for environmental monitoring** of this innovation?
4. What are the specific **requirements for keeping records** of this innovation?
5. What are the specific **requirements for reporting to regulatory organizations** regarding this innovation?
6. What are the specific **requirements for reporting to stakeholders** regarding this innovation?
7. Do the reports have a **required audience(s)**? (Y/N) If yes, please identify the audience(s).

Implementation Questions

8. To what extent have the specific **requirements for environmental monitoring** of this innovation been met?
9. To what extent have the specific **requirements for keeping records** been met?
10. To what extent have the specific **requirements for reporting to regulatory organizations** been met?
11. To what extent have the specific **requirements for reporting to stakeholders** been met?
12. Have reports been delivered to the required audiences identified in question 7? (Y/N) If yes, please list dates and method of communication (e.g., website, email, public notice).

II. Verification

13. How do you ensure that the parties to the innovation comply with the provision(s) of the innovation?
 - a. How will the organization's performance under the innovation be compared to the performance that could have been obtained under the normally applicable regulatory structure?

- b. Who is responsible for verifying compliance and environmental performance results and how will it be done?

III. Practical Enforceability of Innovation

- 14. What is the **pre-innovation “baseline”** for enforcement and compliance assurance against which progress will be (is) measured?
- 15. Can an inspector visiting the innovation site **determine historic and current compliance** from the records maintained on site?
- 16. Does the innovative permit, if applicable, **contain a legal obligation** for the source to adhere to the conditions of the limitation??
- 17. Does the permit **rely on the efficiency of a control technology** for compliance with a permit limit? If so, how is that efficiency determined and shown to be accurate?
- 18. Does the innovation agreement **require the correct type and amount of information** (in logs, notices, monitoring data, etc.) to determine the number and duration of any deviations?
- 19. How will regulators determine—prior to and throughout the innovation—that the facility is **continuing to implement the innovation**)?
- 20. Do the terms of the innovation agreement obligate a regulator to exercise its **enforcement discretion** in specific ways (if so, explain)?
- 21. Does the regulator preserve the requisite statutory **inspection and enforcement authority** to satisfy EPA-State delegations of authority?
- 22. How, and for what reasons, will the **organization return to standard permit terms** should it become necessary to terminate the organization’s participation in the innovation

IV. Redirecting Regulatory Oversight

- 23. What **screening criteria** (e.g., compliance history or participation in leadership programs) are used to ensure that good facility partners participate in the innovation?
- 24. If applicable, what combination of **conditions and characteristics** is being used to establish the confidence or analytical basis for redirecting resources (e.g., compliance history, transparency of decision-making, quality and degree of public involvement, third-party auditing, reporting, etc.)?
- 25. What is the analytical basis being used for **determining the relative priority or risk of agency activities** (for the purpose of targeting staff time and resources)?

V. Results and Relative Advantage

26. To what extent is inspection of a source with the innovation comparable to inspection of a similar source operating under conventional approaches?
27. To what extent **can the source** with the innovation **be more/less easily inspected** to determine compliance than a similar source operating under conventional approaches?
28. Does the innovation **improve on enforcement or enforcement practices** over the current system?

Exhibit 4: Model Table for Monitoring, Reporting, and Record-Keeping (MRR)						
Environmental Media and Pollutants of Concern	Monitoring Approach (continuous, parametric, analytical testing, composite sample, grab sample)	Materials Use and Operating Parameter Requirements (e.g., application rate, percentage by weight)	Data Collection Frequency	Reporting Requirements for Regulatory Authorities and Stakeholders	Record-Keeping Requirements	Compliance Notes (specify date of report and note any deviations)
Air Emissions by Pollutant (tons per year)						
Average Effluent Concentrations by Constituent (mg/L)						
Hazardous Waste Generated (pounds)						

MODULE 5: Public Involvement and Stakeholder Feedback

Before addressing the questions below, it is important to briefly discuss issues related to public involvement and stakeholder feedback and an innovation. For some innovations, a high degree of public input may have been required to develop the innovations, for others, none at all. In some instances, even when a high degree of public involvement was required, those responsible for developing or implementing the innovation may have been less than successful at obtaining the desired levels. In other cases, irrespective of whether public involvement and stakeholder feedback was a requirement for the innovation development, the public may have played a significant role in shaping the innovation. Knowing this information is necessary to understand how well a particular public involvement process worked, and/or what type of outcome (environmental or other) public involvement had in shaping the innovation. However, for the purposes of understanding whether an innovation would make a good candidate for broader application, the most pertinent information involves the innovation's ability to maintain (or enhance) the base amount of involvement required under traditional programs.

I. Stakeholder Participation

1. Who are the key stakeholders?
2. Have State, Tribal, and local government partners been consulted?
3. If applicable, what specific strategies are being considered to ensure the participation of low-income and minority communities?
4. What is the pre-innovation "baseline" for public involvement and accountability against which progress will be measured?
5. How does the innovation address regulatory requirements (Federal/State/local/Tribal) for public involvement?
6. What changes to the transparency in decision-making (for the regulator and/or the regulatee) and the degree of stakeholder/public leverage result from the innovation?

II. Collaborative Dialogue Approaches

7. What are the best means of involving stakeholders in the development of the innovation?
8. What types of collaborative processes or other participatory practices will be used to solicit input?

III. Availability of Information

9. Is information regarding the innovation readily available to stakeholders?
10. What changes to the type, scope, amount, quality (accuracy, relevance), and timing of information available to the public result from the innovation?

IV. Stakeholder Feedback

11. At what stage in the innovation process will stakeholders be involved to ensure participation and an opportunity to incorporate feedback?
12. To what extent has the practitioner been successful in obtaining feedback from the public about the innovation's design and/or implementation?

V. Responsiveness to Stakeholder Priorities and Concerns

13. Has the practitioner developed a process to address the major concerns of stakeholders?
14. Is technical or financial assistance available to facilitate the participation of particular groups of stakeholders?
15. In your opinion, how do stakeholders view their involvement in the innovation?

MODULE 6: Assessing the Potential Transferability of the Innovation

The purpose of the module is to help reduce the uncertainty about an innovation's expected consequences and determine its rate of adoption. In 1962, Everett Rogers wrote the pioneering work, *Diffusion of Innovations*¹, which presents a workable framework for diffusing innovations or innovative thoughts over time. Rogers' work provides us with a systematic approach to understanding the nature of innovations and the existing conditions and culture necessary for accepting, adopting, and implementing innovations. This transferability module is based upon Rogers' innovation-diffusion model, which has five components: 1) relative advantage, 2) compatibility, 3) complexity, 4) trialability, and 5) observability.

I. Relative Advantage

1. Compared to the traditional way of doing business, what has been the measurable impact (positive and/or negative) of the innovation with regard to:
 - a Environmental protection
 - b Organizational management
 - c Economic impacts
 - d Expedited action
 - e Public involvement
 - f Accountability
 - g Environmental justice
 - h Administrative burden
 - i Other areas
2. Who benefits from the innovation?
 - a What do they gain?
3. Who incurs costs as a result of the innovation?
 - a What costs do they incur?
4. What additional data are necessary to inform determination of the relative advantage of the innovation?

II. Compatibility

5. To what extent is the innovation consistent with existing organizational beliefs, values, and/or management approaches?
6. What is the level of support for the innovation from:
 - a Within EPA
 - b The affected entity or entities
 - c Other regulated entities

¹Rogers, E. *Diffusion of Innovations*. 4th Edition. The Free Press, New York: 1995.

- d. State agencies
 - e. Federal agencies
 - f. Local community
 - g. Environmental NGOs
 - h. Environmental Justice groups
 - i. Local government
7. To what extent has a similar innovation been tested before?
- a. Different sector or industry
 - b. Different media
 - c. Different State, EPA Region, local government, Tribe
 - d. Different community
8. Among existing practitioners, to what extent does the innovation support organizational goals, (i.e., department, office or divisional goals, community goals)?
9. Among existing practitioners, to what extent are organizational changes necessary to enable widespread use of the innovation (what specific changes are necessary)?
10. Among potential practitioners, to what extent does a broader user market or audience exist for the innovation?
11. Among potential users, to what extent does the innovation need modifications to be used more broadly (what specific changes are necessary)?
12. Who else might use or be interested in the innovation (e.g., regulated entities not originally contemplated as users of the innovation, or regulators who might be able to transform the innovation in a creative way for other purposes)?
- a. Other regulated entities
 - b. Other regulators (Tribes, local State, EPA Region, EPA Headquarters)
 - c. Communities

III. Ease of Adoption

13. How readily understood is the innovation?
14. To what extent is assistance necessary, and available, to understand and use the innovation?
15. If the innovation needs to be brokered, what assistance products are available?
- a. Are in development
 - b. Need to be created

IV. Trialability

16. To what extent can the innovation be tried on a temporary basis (i.e., one month, one year, etc.)?

17. To what extent can the innovation be tried on a limited scale (i.e., fewer facilities initially or with fewer regulatory authorities)?

V. Observability

18. To what extent are innovation results apparent to others?

VI. Personal Experience and Observations

19. To what extent do you consider the innovation to be an improvement over the traditional way of doing business? In what way(s) was the innovation an improvement?
20. Is the innovation old enough to have a full understanding of its advantages and disadvantages?
- If not, when will it be possible to gain a full understanding of the advantages and disadvantages of the innovation?
21. What are the primary lessons learned from testing and analyzing the innovation that pertain to its broad-scale application?
22. What is the potential for broader application of the innovation?
- Could the innovation be used to address another problem?
23. What are the primary barriers to broader application of the innovation?
24. What are the critical implementation elements needed to overcome the barriers to broader application of the innovation?
25. In your judgment, how would the innovation best be applied?
- What steps could be taken to facilitate more widespread application of the innovation?
 - What steps could reduce the transaction costs of the diffusion?
 - What elements should be scaled-up?
 - What elements should be changed?
 - How might other practitioners be identified?
 - Are there unique circumstances that could impact broader application of the innovation (e.g., window of opportunity)?
26. Are there resource limitations, if any, which would constrain broad-scale application?
27. At what level – national, State, or local – should the innovation be applied?
- What are the appropriate mechanisms for such application?

Innovation-Diffusion Model: Using a Transferability Scale

The ranking table should be used to emphasize the strengths of the innovation and to continue to improve on the weaknesses in order to help transfer the innovation. The table can also be used to help identify priority innovations for scale-up. If the user has multiple innovations, but limited resources, the ranking table can help assist decisions to scale-up those innovations which are highly

transferable first.

Transferability Scale			
Innovation-Diffusion Components	High	Moderate	Low
Relative Advantage			
Compatibility			
Ease of Adoption¹			
Trialability			
Observability			
¹ For ease of adoption, "high" responses are positively related to an innovation's rate of adoption; whereas "low" responses are negatively related).			